



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,886	04/18/2005	Isamu Takehara	S004-5447 (PCT)	4140
40627	7590	02/14/2008	EXAMINER	
ADAMS & WILKS			TAMAI, KARL I	
17 BATTERY PLACE			ART UNIT	PAPER NUMBER
SUITE 1231			2834	
NEW YORK, NY 10004				
MAIL DATE		DELIVERY MODE		
02/14/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/525,886	TAKEHARA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	KARL I.E. TAMAI	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 December 2007.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 9,16-20 and 25-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 9,16-20 and 25-34 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/05; 6/07</u> .  | 6) <input type="checkbox"/> Other: _____ .                        |

## DETAILED ACTION

### ***Information Disclosure Statement***

1. The information disclosure statement filed 6/25/2007 and 2/25/2005 have been provided with an indication that all the references have been considered.

### ***Specification***

2. The amended title "Permanent Magnet and Motor Equipped with Permanent Magnet" is not descriptive of the invention. A new title is required that is clearly indicative of the invention to which the claims are directed. The examiner suggests "Outer Permanent Magnet Rotor with a Thickness determined by Magnetic Domains and AC Phases".

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 9, 26, 28, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US 4888512) and Hendershot ("Design of Brushless Permanent Magnet Motors). Shimizu teaches a permanent magnet rotor having an inner diameter 20mm or less where the thickness of the magnet is a result effective variable (col. 5, lines 30-40). Shimizu teaches the result effective variable include the inner diameter D1 and the number of magnetic domains (P). Shimizu teaches an outer rotor (figure 6), with the stator having a base 31, 32, and a stator mounted on the base to confront the inner surface of the magnet. Shimizu teaches the cylindrical magnets with symmetrical, aligned magnetized, directions (see figures 5a, 5b). Shimizu does not teach the thickness being  $t < \pi D/(NM\pi)$ . Hendershot teaches the magnet thickness ( $L_m$ ) is a result effective variable for determining how the magnet will perform in a magnet circuit (pg 3-20,3-21) and amount of current allowed without demagnetizing the magnet. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Shimizu with the thickness being  $t < \pi D/(NM\pi)$  because Shimizu teaches the magnet can be made small with a large magnetic force, with the calculated thickness including the number of phases because Hendershot teaches the number of phases is a result effective variable in determining the

demagnetization current of the machine, and because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (see *In re Aller*, 105 USPQ 233), and with the inner diameter being smaller than 20 mm to provide a small, weight, and thickness disc drive motor, as suggested by Shimizu.

6. Claims 16-19, 27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US 4888512) and Hendershot ("Design of Brushless Permanent Magnet Motors), in further view of Schuh (US 4535373). Shimizu and Hendershot teach every aspect of the invention except the external rotor with the rotational shaft. Schuh teaches the rotational shaft with an outer rotor to seal the motor from the magnetic recording disk. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Shimizu and Hendershot with the rotary shaft of Schuh to seal the motor from driven magnetic storage disk, as taught by Schuh.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US 4888512), Hendershot ("Design of Brushless Permanent Magnet Motors), and Schuh (US 4535373), in further view of Horikawa et al. (Horikawa)(US 5062095). Shimizu, Hendershot, and Schuh teach every aspect of the invention except the magnet being SmCo. Horikawa teaches SmCo has high productivity and workability and is an alternative equivalent to other rare earth magnets (col. 2, lines 25-25). It would have

been to a person of ordinary skill in the art to construct the magnet of Shimizu, Hendershot, and Schuh with the material being SmCo because it has high productivity and workability as taught by Horikawa, and because it is within the ordinary skill in the art to choose between known equivalents.

8. Claims 25 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US 4888512) and Hendershot ("Design of Brushless Permanent Magnet Motors), in further view of Horikawa et al. (Horikawa)(US 5062095). Shimizu and Hendershot teach every aspect of the invention except the magnet being SmCo. Horikawa teaches SmCo has high productivity and workability and is an alternative equivalent to other rare earth magnets (col. 2, lines 25-25). It would have been to a person of ordinary skill in the art to construct the magnet of Shimizu and Hendershot with the material being SmCo because it has high productivity and workability as taught by Horikawa, and because it is within the ordinary skill in the art to choose between known equivalents.

***Response to Arguments***

9. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new grounds of rejection. Applicant's argument regarding claim 9 is not persuasive because the outer rotor is taught by Shimizu (see figure 6). Applicant's argument that references do not teach thickness being  $t < \pi D/(NM-\pi)$  is not persuasive for the reasons cited above. The thickness of the magnet  $t$  is a result effective variable as recognized by Shimizu and the diameter being less than 20 mm

(col. 5, lines 40-50), to provide a highly efficient low cost magnet. The result effectiveness of the magnet thickness is supported by Henderson (pg 3-20,3-21) which teaches the thickness that accommodates the stator current without being demagnetized. Therefore, the thickness of the magnet is a result effective variable which is obvious to optimize (see MPEP 2144.05). The Applicant has not provided any evidence of unexpected result or the prior art teaching away from the Applicant's claimed thickness (as set forth in MPEP 2144.05). The Applicant's claimed use of the domains (magnetic poles), phases, and the diameter of the magnet is not persuasive because these also are result effective variables (see Shimizu, col. 6, lines 1-20), and Hendershot teaching the thickness being dependent on the stator current to demagnetize the rotor magnet which based on the number of phases (see eq. 3.8). Therefore maximizing the thickness based on the motor parameters is within the ordinary skill in the art to provide an efficient and inexpensive magnet (Shimizu) which will not be demagnetized by the stator (Hendershot).

### ***Conclusion***

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai at telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg, can be reached at (571) 272 - 2044. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/  
PRIMARY PATENT EXAMINER  
February 14, 2008